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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,698	09/15/2003	Steven R. Smith	99-0866.3	9778
22823	7590	11/01/2004	EXAMINER	
STEPHEN A GRATTON THE LAW OFFICE OF STEVE GRATTON 2764 SOUTH BRAUN WAY LAKEWOOD, CO 80228			NGUYEN, DILINH P	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 11/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/662,698

Applicant(s)

SMITH, STEVEN R.

Examiner

DiLinh Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 57, 58 and 60-82 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 57, 58 and 60-82 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment filed 10/12/04 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the first polymer member, the molded material and the filler configured to reduce thermo mechanical stresses in the package; and the second polymer member comprises a second filler, the polymer members are located on opposing sides of the die.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 57, 60, 64-65 and 78 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The first polymer member, the molded material and the filler configured to reduce thermo mechanical stresses in the package (claims 57, 65); the second polymer

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member comprises a second filler (claims 60, 64 and 78); the polymer members are located on opposing sides of the die (claim 75) are new subject matters.

4. Claim 74 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Fig. 5 discloses the plurality of polymer members 66 on the lead frame, wherein the polymer member is a tape. How can a tape (polymer member 66) comprises a filler?

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 57-58, 61-70 and 78-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kennedy (U.S. Pat. 3778685) [previously applied] in view of Ishikawa et al. (U.S. Pat. 5394014) [previously applied].

- Regarding claims 57 and 64, Kennedy (fig. 2, column 2, lines 41 et seq.)

discloses a semiconductor package comprising:

a leadframe 15;

a die 12 on the leadframe; and

a plastic body comprising a first polymer member 13 (column 4, lines 67-68) encapsulating the die and a portion of the leadframe, a second polymer member 14 (column 2, line 44 and column 3, lines 20-25) encapsulating the first polymer member, the first and second polymer members comprising a molded materials configured to reduce thermo mechanical stresses in the package.

Kennedy does not disclose at least one filler in the first polymer member.

Ishikawa et al. (fig. 4, column 5, lines 3-5) disclose a semiconductor package comprising: a first polymer member 1 comprising a molded material and at least one filler. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device structure of Kennedy by having the filler into the molded material, as taught by Ishikawa et al., in order to provide a highly reliable semiconductor device, which is improved in light shielding property (Ishikawa et al., column 6, lines 17-20).

- Regarding claim 58, Kennedy discloses that the molded material 13 comprises a cured molding compound (column 3, line 67 to column 4, lines 1-2).
- Regarding claim 61, Kennedy discloses that the first polymer member has a selected geometry (fig. 2).
- Regarding claim 62, Kennedy discloses that the first polymer member has selected dimensions (fig. 2).
- Regarding claim 63, Ishikawa et al. discloses that the die includes wire bonds and the first polymer member 1 encapsulates the wire bonds (fig. 4).

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- Regarding claims 65 and 78, Kennedy (fig. 2, column 2, lines 41 et seq.)

discloses a

semiconductor package comprising:

a leadframe 15;

a die 12 on the leadframe;

the first polymer 13 member encapsulating the die and at least a portion of the leadframe; and

a second polymer member 14 encapsulating the first polymer member;

the first polymer member comprising a rigid molded material having a selected geometry configured to reduce thermo mechanical stresses in the second polymer member.

Kennedy does not disclose at least one filler in the first polymer member.

However, Ishikawa et al. (fig. 4, column 5, lines 3-5) disclose a semiconductor package comprising: a plurality of wire bonds bonded to the die and the leadframe; a first polymer member 1 encapsulating the wire bonds, wherein the first polymer member comprising a molded material and at least one filler. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device structure of Kennedy by having the filler into the molded material, as taught by Ishikawa et al., in order to provide a highly reliable semiconductor device, which is improved in light shielding property (Ishikawa et al., column 6, lines 17-20).

- Regarding claim 66, Kennedy discloses that the selected geometry provides substantially equal volumes of a molding compound of the second polymer member on either side of the leadframe (fig. 2).
- Regarding claim 67, Ishikawa et al. disclose that the filler is configured to increase a rigidity of the first polymer member (column 6, lines 17-25).
- Regarding claim 68, Kennedy discloses that the selected geometry provides substantially equal volumes of a molding compound of the second polymer member on either side of the leadframe (fig. 2); therefore, the package would reduce a package bow or warpage.
- Regarding claim 69, Kennedy discloses that the second polymer member 14 comprises the rigid molded material (fig. 2, claim 3).
- Regarding claim 70, Ishikawa et al. disclose that the polymer member 1 is made of epoxy resin (fig. 4, column 5, lines 3-5) and it would have been obvious that the epoxy resin comprises a cured B-stage epoxy.
- Regarding claim 79, Ishikawa discloses that the first molding compound 1 comprises a rigid plastic (fig. 4).
- Regarding claim 80, Kennedy discloses that the second polymer member 14 comprises substantially equal volumes of the second molding compound on either side of the leadframe (fig. 2).
- Regarding claim 81, Kennedy discloses that the first polymer 13 has a selected geometry and selected dimensions (fig. 2).

- Regarding claim 82, Ishikawa et al. disclose that the polymer members 1 and 31 are made of epoxy resin (fig. 4, column 5, lines 3-5 and 25-27) and it would have been obvious that the epoxy resin comprises a cured B-stage epoxy.

7. Claims 71-73 and 76-77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inaba (U.S. Pat. 6093958) [previously applied] in view of Ueda et al. (U.S. Pat. 5157478) [newly cited].

Inaba discloses a semiconductor package comprising:

a lead frame 31 having a first side and a second side;

a die 1B on the lead frame;

a plurality of plate members 9 on the lead frame;

a plastic body 6 comprising a molding compound encapsulating the plate members and at least a portion of the lead frame, the plastic body having a first portion on the first side having a first volume and a second portion on the second side having a second volume;

the plate members 9 having a selected volume configured to equalize the first volume and the second volume and to reduce thermo-mechanical stresses in the package during molding of the plastic body (fig. 8, column 4, lines 7 et seq. and column 5, lines 50-55).

Inaba does not explicitly disclose the plate member is a polymer member.

However, Ueda et al. disclose that polymer is well known material in the art to form a plate member 1 (fig. 11B, column 1, lines 20-23). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the plate

members of Inaba by the polymer members, as taught by Ueda, to improve the reliability of the package. Moreover, selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co., Inc. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

- Regarding claim 72, Ueda et al. disclose that the polymer member 1 comprises a material selected from the group consisting of polyimide (fig. 11B, column 1, lines 20-23).
- Regarding claim 73, Ueda et al. disclose that the polymer member 1 comprises a tape material (column 1, lines 20-23).
- Regarding claim 76, Ueda et al. discloses that the polymer member 1 has a generally rectangular shape (cover fig.).
- Regarding claim 77, Ueda et al. disclose that the polymer member comprises an electrically insulating cured material [polyimide] (fig. 11B, column 1, lines 20-23).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DiLinh Nguyen whose telephone number is (571) 272-1712. The examiner can normally be reached on 8:00AM - 6:00PM (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DLN



HOAI PHAM
PRIMARY EXAMINER